BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: March 21, 2018
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Sarah Large
Ron Crickard
Steve Johnson
Doug Locker
Meli Dube
Joseph Adams
Mac Laurin
Ron Kleiner
Rebecca Martin
Josh Lafond
John Sargent
Tobey Reynolds

ACOE
Mike Hicks

EPA
Mark Kern

NHDES
Gino Infascelli
Lori Sommer
Ryan Duquette

NHF&G
John Magee

NH Natural Heritage Bureau
Amy Lamb

Consultants/Public Participants
Christine Perron
Kim Smith
Josh Lund

(When viewing these minutes online, click on an attendee to send an e-mail)

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:
(minutes on subsequent pages)

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

NOTES ON CONFERENCE:

Finalization of the December 20th and January 21st Natural Resource Agency Meeting Minutes.
Matt Urban ask the group if there were any other comments or edits for the December 20th and January 21st meeting minutes. We had received only a few comments for each. No one objected to finalizing both sets of minutes. The minutes were finalized and posted after the meeting.

Eaton, #41864 (Non-Federal)
Steve Johnson provided an overview of the project location, condition of the pipe, and the proposed work. The metal pipe located in Eaton carrying Brownfield road over Snow Brook was noted to have rust issues as well as scour concerns. The purpose of the project is to rehabilitate the metal pipe by placing a concrete invert with cutoff walls and toe walls and placing rip rap at either end of the pipe to protect the structure. It was also stated that the west side of structure would be used for access and the temporary impacts reflected that.
Lori Sommer asked about the perch at the site. S. Johnson said there was no perch at this time.
John Magee noted that through the fish survey that there were Brook Trout and Slimy Sculpin in the area. The concern for fish passage would be dependent on the depth of the water at the outlet. S. Johnson replied that it would be a 6 in. thick invert, enough concrete to cover the reinforcing.

Mike Hicks asked if the site was historic. Matt Urban responded by saying the Bureau of Environment would have the project looked at by the Cultural Resources Program.

M. Hicks asked if there would be any tree cutting done for the proposed project. S. Johnson said he did not know, but the Bureau of Environment would submit the 4(d) form once they knew.

L. Sommer asked what the profile of the stream would look like with the riprap in place. J. Magee said he would also be interested in seeing the profile.

L. Sommer expressed an interest in seeing the project again.

Gino Infascelli suggested using logs as a weir in this location. J. Magee mentioned that the purpose of logs would be defeated since they would have to be anchored using rocks.

G. Infascelli also corrected the location of the bridge on the location map.

L. Sommer said the new riprap would require mitigation, and asked if alternative designs would be explored.

S. Johnson said alternative designs would be included.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Madison, #40775 (Non-Federal)
Steve Johnson provided an overview of the project located in Madison. The proposed work includes the rehabilitation of the existing bridge carrying NH 153 over Purity Pond Brook. The existing bridge is a jack arch bridge with a concrete slab portion and an I-beam with concrete deck portion. The project will be replacing the steel portions with a concrete deck, and the project will only require temporary impacts.

Lori Sommer asked if flow diversion would be required. S. Johnson said if needed there would sandbags used to divert the stream.

John Magee mentioned there were Brook Trout and Eastern Creek Chubsucker present and there were no concerns for fish passage.

Gino Infascelli mentioned that there was a permit for the bridge from 1996.

Matt Urban stated that there were no permanent impacts so no mitigation would be required.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Orford, #40366 (X-A004(371))

Christine Perron began by noting that the project had last been discussed at the September 2017 meeting. The purpose of today's discussion is to review the alternatives analysis and preliminary impacts. The project proposes to replace the bridge that carries NH Route 25A over Brackett Brook. This is a Tier 3 stream crossing and the stream has an average bankfull width of 29 feet. This area experienced two major rain events last year in July and November, and much of this route was closed to through traffic after each event due to the extent of damage that occurred. Flooding and subsequent clean up and repairs resulted in substantial disturbance to the channel and banks in the vicinity of the bridge.

Kim Smith provided a summary of the existing bridge and an overview of the alternatives analysis. The existing bridge is a 2-span concrete bridge that was built in 1929 and widened in 1979. The overall length from the face of each abutment is 36.5 feet. The superstructure is rated as poor condition and the bridge is on the NHDOT Red List. The pier and abutments are in fair condition. The bridge is listed as scour critical.

Two span lengths have been considered for replacement alternatives: a 57' span, which would meet the stream crossing guidelines recommendation of 1.2 x bankfull width plus 2 feet, and a 45' span, which would be approximately bankfull width. Providing a longer span would result in a deeper superstructure and a profile raise.

In addition to span length, different construction methods were considered. The construction of a temporary detour bridge would result in substantial wetland and property impacts and was not carried forward as a viable alternative. The use of phased construction (one lane of alternating traffic) was considered using two roadway widths: 12' and 14'. A 14-foot roadway width would require a permanent alignment shift to the north. Accelerated Bridge Construction, which would require closing the roadway for a short period of time, reduces costs and impacts.

The recommended alternative at this time is a 57' span using Accelerated Bridge Construction (ABC). The abutments of the proposed bridge would be located behind the existing abutments, and ABC would allow for shorter construction duration and reduced impacts. This alternative would maintain the existing horizontal roadway alignment and would raise the profile of the roadway approximately 1 foot. The cost of this alternative is similar to the 45' span but would

meet the stream crossing guidelines. The span would pass the 100-year flood and would meet the 1.2 x bankfull plus 2 feet guideline. Riprap would be installed across the channel but would be embedded to allow for placement of two feet of natural streambed material. The alternatives analysis needs to be reviewed by NHDOT before a proposed alternative is confirmed.

C. Perron provided a summary of preliminary impacts that would result from the recommended alternative. Permanent stream impacts would be approximately:

Channel – 2,450 sq ft (125 linear feet)
Bank – 3,100 sq ft (325 linear feet)
Total stream impacts 5,550 sq ft (450 linear feet)

In addition, raising the elevation of the roadway would result in slope impacts to roadside wetlands. Total permanent wetland impacts would be approximately 3,000 sq ft.

During normal flows, the wetted channel is approximately 10 to 15 feet wide, so there would be a dry area along the channel under the bridge during most flows that would accommodate wildlife passage.

The project would not impact other resources. The Natural Heritage Bureau has no records of rare species or exemplary natural communities. The only federally listed species of potential concern is the northern long-eared bat. The bridge was reviewed for potential bat roosting and no evidence of roosting was observed. There will be some tree clearing but the project is expected to qualify under the FHWA Programmatic Consultation for northern long-eared bat. A Zone A floodplain is located approximately 200' downstream of the project area and no impacts are anticipated. The bridge is not eligible for the National Register.

The stream channel has been highly disturbed by the two flood events in 2017, and the new bridge will be longer with a natural bottom. For these reasons, C. Perron asked for input on the project being considered self-mitigating.

Lori Sommer asked if all proposed impacts would be located within storm damaged areas. C. Perron replied that she thought that was the case but she would need to confirm this.

John Magee asked if the reason for storm damage at the bridge was known. C. Perron replied that it seemed to be largely due to the steep gradient of the stream channel immediately upstream from the bridge, followed by a sharp bend in the channel to go under the bridge. During the recent storm events, a high volume of water bypassed the bridge and washed out a stone retaining wall that was located along the bank in the southeast quadrant of the bridge. From there, the stream flowed along and over the roadway. K. Smith noted that the proposed design included a concrete wingwall in the location of the former retaining wall.

J. Magee asked how deep the riprap would be and if the proposed streambed would be at the same elevation as the existing streambed. K. Smith said that the depth of riprap isn't known yet, but it would be embedded to leave space for approximately 2 feet of streambed material that would match the elevation of the existing streambed. J. Magee recommended using well-blended stone

material to prevent voids that could lead to hyporheic flow. He would check his files for a specification that addresses the placement of the underlying riprap to avoid this situation.

J. Magee asked if the proposed bridge would be higher. K. Smith replied that the elevation of the bottom chord on the new bridge would match the elevation of the existing bridge. The increased hydraulic capacity would be achieved by the longer span and elimination of a center pier.

J. Magee asked when construction would take place. He expected that white suckers would be in this stream and would be migrating/spawning in May. C. Perron noted that the project doesn't advertise for bids until late 2020, so it was too soon to determine what the construction sequence may be. She would note the concern with in-water work in May in the NEPA document and this concern could be discussed further when the permitting phase begins.

Gino Infascelli noted that he could include this site in an upcoming field review.

Lori Sommer noted that mitigation would not be required for the 57' span since it meets the stream crossing rules and the area has been previously impacted during flood repairs. She did ask that plantings be considered where possible. If the Department ultimately decides against the 57' span as the preferred alternative, then the proposed project would need to be revisited.

C. Perron stated that the NEPA document is scheduled to be completed this spring, and the permitting phase would begin in late 2018 or early 2019.

This project has been previously discussed at the 9/20/2017 Monthly Natural Resource Agency Coordination Meeting.

Portsmouth, #27690 (X-A003(589))

Christine Perron began by noting that the project had last been discussed at the January 2016 meeting. The project will address the bridge that carries US Route 1 Bypass over Hodgson Brook. The purpose of today's discussion is to review the proposed alternative and preliminary impacts. Since the last meeting, the alternatives analysis was completed and public input was received, and the proposed alternative is now rehabilitation.

Josh Lund and John Sargent provided an overview of the project. The bridge is located just south of the Portsmouth traffic circle. After consideration of potential future widening along this corridor in 20 to 30 years, rehabilitation of the bridge was determined to be more prudent than replacement. The bridge is comprised of five concrete boxes, with a total length of 45 feet and a width of 72 feet curb to curb. Each bay is 8' wide by 6.5' high. The rehab will address significant corrosion and deterioration of concrete on the ceiling, invert, and walls of the structure, and will upgrade the bridge rail. Stream flow is largely concentrated in three of the five boxes and water levels are generally shallow through the structure, with approximately 6" of water at normal flows.

Temporary impacts to jurisdictional areas will be required for construction access and water diversion. Permanent impacts will be required to address the perched outlet of the structure. Christine Perron noted that the floor of the bridge structure is perched approximately 6" above the surface of the stream. This perch limits upstream fish passage. This concern was raised by a few

groups, including the Hodgson Brook Local Advisory Committee. The right-of-way on the outlet side does not provide sufficient space for a weir or rock vane that would raise the water elevation. Therefore, to address the perch, imported streambed material will be placed at the outlet and shaped to grade up to the invert. The stone will result in approximately 200 sq ft of permanent impact along approximately 15 linear feet of channel. Since the stone is not required to address concerns with the structure itself, addressing fish passage is the only reason permanent impacts will be necessary for this project.

Mike Hicks asked if the stream is tidally influenced. C. Perron replied that it is freshwater with no tidal influence.

Gino Infascelli asked if the concrete invert of one of the cells could be lowered 1 to 2 inches to help provide deeper water for fish passage. J. Sargent responded that this would be possible. The upstream side of the structure has a 4" lip at the invert. The intent is to remove this lip in one cell to allow more water to enter the cell, resulting in 3" to 4" deeper flow than the other cells.

John Magee recommended using well-blended stone material to prevent voids that could lead to hyporheic flow, which would also create a barrier to fish passage.

Lori Sommer stated that mitigation would not be required since the stone would address fish passage concerns and could be considered self-mitigating.

Mike Hicks commented that there is a known bat hibernaculum in Portsmouth. C. Perron noted that it was not reported by the Natural Heritage Bureau. This likely means that it is not in the vicinity of the project, but she would look into this.

The project is scheduled to advertise in September 2018, so the permit application would be submitted within the next month.

This project has been previously discussed at the 1/20/2016 Monthly Natural Resource Agency Coordination Meeting.

Bethlehem, #26763 (X-A004(296))

The proposed project will address a culvert under Main Street (US Route 302) between Maple St (NH Route 142) and Congress Road in Bethlehem. The project had been reviewed previously (5/15/2015 and 11/16/2016). The Design team was returning to update the agencies on a modification to the design. The stream through the structure is a tributary to Barrett Brook. Josh Lafond explained that the culvert has been dubbed the 'Franken-culvert' because it is made up of several different materials. J. Lafond explained that there is a lot of impervious surface in the project area and showed pictures of the project area. He described that the culvert goes under a local business parking lot. At the inlet the culvert has around 7 feet of cover and at the outlet there is around 11 feet of cover.

J. Lafond described the poor condition of the structure including the currently perched condition of the outlet. He showed photos of the winter collapse of a catch basin, a sink hole, and the failing

upstream concrete retaining walls at the culvert inlet. J. Lafond also showed a photo of the wooden bridge that was donated to the town that is near the Bethlehem Visitor Center. J. Lafond showed pictures form inside the culvert and explained that District had informed the design team that this culvert requires a lot of maintenance. At the outlet, the pipe is steel and has corroded and separated. J. Lafond described the slope of the existing stream and culvert. At the inlet there is a 3.5% slope, through the culvert the slope is ~4% and at the outlet the slope is 1%.

J. Lafond showed a summary of the alternatives under consideration. All alternatives include a pavement overlay because a recent paving project skipped this section. J. Lafond explained that the design team had been pursuing replacement of the culvert with a 12' by 8' concrete box with baffles. This design would have included storm water treatment and full box reconstruction of US Route 302 in the project area to address drainage issues. The design included sheet piles on the outlet side near the Antique/Transmission Shop (White Mountain). Borings were needed to check constructability due to debris in the area. Also, due to the use of the property, it was determined to be prudent to check for contamination. The results of sampling found that both groundwater and soil exceeded standards. Soil and groundwater removed from the site would likely need to be taken away as solid waste or potentially the groundwater from dewatering could be treated. Either way, the cost of the project would increase significantly. Also, there is liability if the project activities were to cause the contamination to be mobilized.

The Design team informed the Front Office of the contamination and associated increase in project cost. The Front Office indicated that the team should explore rehabilitation options. The team is exploring a geopolymer lining with roughness to control water velocities and slipline options. The slip line options include plastic and steel. The plastic would significantly increase the velocity of water through the stream, and so, will not be pursued. The geopolymer spray on liner and the steel slip line would not significantly alter the velocities. The geopolymer is still fairly new (has not been used in NH to date), so the team would prefer to proceed with a corrugated metal slip line that would likely be 54 inches in diameter. The actual size of the liner will be dependent upon what is available and recommened by the suppliers. A 54" corrugated metal slip line would pass the 100 year storm. The impacts at the outlet, where the contamination was found, would be minimal. The team may try to create a pool or pad at the outlet to reduce the perch. The Department's Bridge Design Bureau will assist with the design parameters.

The group discussed the concrete retaining walls at the inlet. The walls would be replaced with updated and more stable walls. T. Reynolds explained that if it works with the design, the retaining walls would be shorter in length and shorter in height. M. Urban inquired if the wall replacement were in kind, would it be okay not to mitigate? L. Sommer agreed that mitigation for the retaining walls would not be necessary.

J. Lafond described that the slipline would require 100 linear feet of bank impacts and 450 square feet of stream impacts. J. Lafond shared the stream crossing assessment recommendations and explained that this design would not meet all of the recommendations. The design probably will encounter groundwater at the inlet. J. Lafond showed a slide describing the contamination concerns. R. Martin and J. Lafond described the soil exceedances including PAHs, lead and mercury and the groundwater exceedances including VOCs and heavy metals. Managing impacted soils and groundwater would be very expensive and expose the Department to liability if any

contaminants were mobilized. T. Reynolds commented that boring will probably be necessary at the inlet. The amount of excavation at the inlet may need to be scaled back depending on the outcome of any sampling conducted. R. Martin explained that the site is dual listed in NH DES OneStop for oil and hazardous waste. NH DES will be sending a letter to the owner of White Mountain Transmission and will copy DOT soon. The letter is anticipated to include instructions to the property owner. L. Sommer would like to hear what is recommended to the property owner. The project area is not considered by the USFWS to be potential habitat for the Northern Long-eared Bat. It is also too developed to serve as habitat for the Canada Lynx. The NHB database did not have any species occurrences indicated. The group discussed fish passage. R. Martin explained that in the NH Aquatic Resource mapper the crossing downstream has full aquatic organism passage (AOP), and the upstream crossing is a perched concrete box with no AOP. The NH Aquatic Resource Mapper indicates that Barrett Brook is a 'DES Predicated Coldwater Fishery Habitat'.

John Magee suggested that the Bureau of Environment consider the Coffman Thesis Models to determine if fish passage is likely a possibility for a pipe of this length and slope. The Design team will need to supply an estimate of the perch that will result from the slipline (reducing diameter) and design options for the structure outlet. J. Magee commented that at some point of length and slope (7% was referenced as a tipping point) fish cannot pass through a structure.
Mark Hemmerlein inquired about the grout between the existing structure and the slipline. T. Reynolds explained flowable fill may be used, but the design has not progressed to this point yet. Lori Sommer asked that the perch be revisited at a future meeting. L. Sommer inquired if the flowable fill can address the sink hole/failures. T. Reynolds explained that it can. G. Infascelli explained that this design does not meet the stream crossing rules. He expressed understanding that this is a difficult situation. G. Infascelli and L. Sommer are trying to be logical and consider what is feasible. The Design team will continue to pursue the design of the corrugated metal slipline and will plan to return to another Natural Resource Agency Coordination meeting to discuss when the design has progressed and more is known about how DES will be addressing the contamination on the White Mountain Transmission site.

Follow-up items:
***After the meeting John Magee checked the fish survey database and found that wild brook trout, slimy sculpin and blacknose dace were caught at a site downstream at Cherry Valley Road, so he would expect that all three species are likely to be at the culvert in question under US Route 302.

***John Magee also ran the numbers for the culvert at 175 feet in length (= 53.3m) and a slope of 4.1% through the Coffman coarse filters. All scenarios below assume no outlet perch and no sediment throughout the proposed pipe.

1. For Model A (basically adult brook trout): 53.3*4.1 = 217.3. That is roughly in the middle of the indeterminate category that ranges from 50-600 (meaning, we can't be sure if it is passable or not passable).
2. For Model B (baby trout and minnows such as blacknose dace in streams in this part of the stream): 217.3 is predicted to be not passable.
3. For Model C (slimy sculpin in this stream): 217.3 is predicted to be not passable.

If there is a perch on the outlet, then it pushes Model A closer to not passable (but again, it is in roughly the middle of the indeterminate category). If the perch is eliminated, then it is possible that adult brook trout will be able to swim upstream through the proposed pipe. However, even if there is no perch on the outlet, the culvert will not be passable to any other fish species.

This project has been previously discussed at the 5/20/2015 and 11/16/2016 Monthly Natural Resource Agency Coordination Meetings.